

DETAILED ACTION

The amendment filed on February 4, 2010, has been entered. Claims 1-10 have been cancelled, and claims 11-18 have been added. Therefore, claims 11-18 are currently pending in the application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation of claim 1 states that "the injector unit including means for causing a lower pressure loss of the transport gas flow than a minimum possible pressure loss set at the aerosol discharge by a high flow speed and at the same time a low volumetric flow at the atomizing location in the region of the injector unit". Other than action of the claimed venturi type injector, the steps and/or structures required to accomplish this are not described in the specification. As a result, these missing specification elements renders claim 11 indefinite. For the purposes of examination, it will be construed that this is supposed to reflect the normal, inherent operation features of a venture injector.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh (2002/0084146) in view of Gregory et al. (5,125,480) in further view of Kaelberer (2004/0124265).

As per claim 11, Itoh discloses A device for producing an aerosol (abstract) for use as a lubricant and coolant for a tool, in which an injector unit (5) is configured to receive and mix a liquid flow from a liquid container (10 and 10a) and a transport gas flow from a gas supply through a transport gas flow line (3) to form the aerosol in an aerosol chamber (8a) inside the liquid container (8) above a level of liquid (10a) inside the liquid container, an aerosol line (14) being provided from the liquid container for guiding the aerosol from the aerosol chamber to an aerosol discharge (14a) arranged in the region of the tool, comprising the improvement: wherein the injector unit (5) has a flow conducting means for the transport gas flow and the liquid flow which is configured to produce a sucking-in and atomizing function for the liquid flow when there occurs a pressure loss for the transport gas flow (This is an inherent properties of a venture injector) , said injector unit including means for causing a lower pressure loss of the transport gas flow than a minimum possible pressure loss set at the aerosol discharge by a high flow speed and at the same time a low volumetric flow at the atomizing location in the region of the injector unit (This is an inherent properties of a venture injector, see the 35 USC112 rejection above).

However, Itoh does not disclose: a first pressure sensing means is provided in the transport gas line that is configured to supply gas flow to the injector unit and in the region of the aerosol line; wherein a second pressure sensing means is provided for

measuring the pressure inside the liquid container and, consequently, the pressure of the aerosol in the aerosol line.

Gregory et al. discloses a lubrication system with a first pressure sensing (21) means is provided in the transport gas line (20) that is configured to supply gas flow to the injector unit (28) and in the region of the aerosol line; wherein a second pressure sensing means (34) is provided for measuring the pressure inside the liquid container (36) and, consequently, the pressure of the aerosol in the aerosol line.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Itoh's lubricant atomizer with the pressure sensing means of Gregory et al. as a way to monitor the performance of the atomizer while in operation and to provide information to control the process.

Itoh further does not disclose: a control unit includes a gas control device in the further gas flow line, said control unit being configured for controlling the gas control device to regulate a differential pressure between the pressure in the transport gas line and the pressure in the aerosol line depending on a comparison of actual pressure values sensed by the first and second pressure sensing means with set pressure differential values stored in a set-value memory on the basis of various parameters for different machining operations.

Kaelberer discloses a device and method to produce an aerosol which includes a control unit (10) that includes a gas control device (8) in the further gas flow line (6), said control unit being configured for controlling the gas control device to regulate a differential pressure between the pressure in the transport gas line and the pressure in

the aerosol line depending on a comparison of actual pressure values sensed by the first and second pressure sensing means with set pressure differential values stored in a set-value memory on the basis of various parameters for different machining operations (paragraphs 45, 67-68, and 70-75).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Itoh's lubricant atomizer by incorporating the control unit of Kaelberer as a means to automatically control the atomizer to optimize the production of the lubricant aerosol.

As per claim 11, the combination of Itoh, Gregory et al., and Kaelberer discloses the claimed invention except for a further gas flow line is connected in circuit with the transport gas flow line to said injection unit and extends to the interior of said liquid container and the aerosol chamber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the gas flow line which is connected in circuit with the transport gas flow line to said injection unit and extends to the interior of said liquid container and the aerosol chamber, since it has been held that the mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis paper co. v. Bemis Co.*, 193 USPQ 8.

As per claim 12, Itoh discloses: the injector unit (5) has at least one channel portion for the transport gas flow (outside of 5c) and at least one channel region for the liquid flow (inside of 5c), wherein the channel portion for the transport gas flow is configured as an annular channel concentrically surrounding the channel region for the liquid flow (depicted in figure 2), the annular channel having an annular constriction,

which together with an outer casing of the end region of the channel region for the liquid flow forms an annular gap (depicted in figure 2).

As per claim 12, Kaelberer teaches the control unit (12) is configured to set a lower pressure loss of the transport gas flow than a minimum possible pressure loss at the aerosol discharge by a high flow speed and at the same time a low volumetric flow at the atomizing location in the region of the injector unit (it is construed that one with ordinary skill in the art would be capable of programming the control unit to properly reflect the inherent properties of a venturi injector).

As per claim 13, Itoh discloses: the channel portion (outside of 5c) for the transport gas flow of the injector unit narrows in a funnel-shaped manner in the direction of flow towards the annular constriction (Depicted in figure 2), and the injector unit (5) has an aerosol chamber portion (7) lying downstream of the end region that widens in a correspondingly funnel-shaped manner in the direction of flow (Depicted in figure 2).

As per claims 14 and 15, the combination of Itoh, Gregory et al. and Kaelberer discloses all of the structural limitations of claim 13 above.

However, Itoh does not disclose: the annular gap is configured with dimensioning of < 0.5 mm (Claim 14), or the annular gap is configured with a dimensioning of approximately 0.1 mm (Claim 15).

It could be ascertained by one with ordinary skill in the art at the time of the invention to optimize Itoh's lubricant atomizer through determining an optimal size for the annular gap by routine experimentation to achieve the desired performance of the injector. See MPEP 2144.05 (II) A.

As per claim 16, Kaelberer teaches: the control unit (10) includes a control program which is configured (1) to activate at least one aerosol producer with different control commands and in each case performs differential pressure measurements by means of the first and second pressure sensing means (Paragraph 45 and 71-75), and (2) to compare the sensed actual values of the differential pressure measurements with corresponding set values of the set-value memory and finally select appropriate parameters from the set-value memory (Paragraph 75).

As per claim 16, the combination of Itoh, Gregory et al., and Kaelberer discloses the claimed invention except for more than one injector unit is provided. It would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the injector unit, since it has been held that the mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis paper co. v. Bemis Co.*, 193 USPQ 8.

As per claim 17, Itoh discloses: the injector units are supplied with gas flow (3) and liquid flow (13 and 16) through parallel connections (depicted in figures 1 and 2).

As per claim 17, Kaelberer teaches that a control branch of the transport gas line (6) that can be controlled by an actuating element (8) is respectively connected, and wherein the control unit (10) is configured to activate the actuating elements in such a way that at least one injector unit is permanently functioning (paragraphs 64 and 78).

As per claim 18, Kaelberer teaches that the set memory (paragraph 70) is configured to have control defaults and wherein the activation of the actuating elements

by the control unit (10) takes place in dependence on the corresponding control defaults of the set-value memory.

Specification

5. The amendment to the specification is acceptable and has been entered.

Response to Arguments

6. Applicant's arguments with respect to claims 11-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT T. REESE whose telephone number is (571) 270-5794. The examiner can normally be reached on M_F 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Q. Nguyen can be reached on (571) 272-6952. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Q. Nguyen/
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RTR